IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF DELAWARE

GUARDANT HEALTH, INC., Plaintiff v. FOUNDATION MEDICINE, INC., Defendant.	C.A. No. _____ **JURY TRIAL DEMANDED**

COMPLAINT

Plaintiff Guardant Health, Inc. ("Guardant"), for its complaint against Defendant Foundation Medicine, Inc. ("Foundation") on behalf of itself, by Guardant's attorneys, hereby alleges as follows:

NATURE OF THE ACTION

1. This is an action for patent infringement arising under the patent laws of the United States, Title 35, United States Code, against Defendant Foundation.

2. Guardant brings this action to halt Foundations' infringement of Guardant's rights under the Patent Laws of the United States 35 U.S.C. § 1, et seq., which arise under U.S. Patent Nos. 10,501,810 ("the '810 patent") (attached as Exhibit 1), 10,704,085 ("the '085 patent") (attached as Exhibit 2), and the 10,704,086 ("the '086 patent") (attached as Exhibit 3), 10,793,916 ("the '916 patent") (attached as Exhibit 4), 10,801,063 ("the '063 patent") (attached as Exhibit 5), 9,840,743 ("the '743 patent") (attached as Exhibit 6), and 9,834,822 ("the '822 patent") (attached as Exhibit 7).

PARTIES

1. Guardant is a corporation organized and existing under the laws of the state of Delaware, having its principal place of business at 505 Penobscot Dr., Redwood City, CA 94063.

2. Guardant was founded in 2012 by pioneers in DNA sequencing and cancer diagnostics. Since its inception, Guardant has focused its expertise on the development of liquid biopsy cancer assays. It was the first company to develop and commercialize a comprehensive liquid biopsy assay to identify genomic biomarkers for advanced solid tumors using "cell-free circulating tumor DNA," or "ctDNA," from simple, non-invasive blood draws.

3. Today, Guardant markets and sells the Guardant360® ctDNA assay ("Guardant 360"). Guardant360 uses advanced DNA sequencing methods to identify targeted therapy treatment options based on the specific changes—also known as somatic mutations—that occur within the DNA of cancer cells. Guardant360 has helped thousands of oncologists find accurate and actionable information about tens of thousands of cancer patients, while avoiding the high costs and added risks of tissue biopsies.

4. Guardant also markets and sells the GuardantOMNI ctDNA assay ("Guardant OMNI). GuardantOMNI also uses DNA sequencing methods to provide a comprehensive genomic profiling tool to help accelerate clinical development programs in immuno-oncology and targeted therapy. Guardant OMNI has helped a number of partner biopharmaceutical companies and research labs develop their cancer drug development pipelines.

5. On information and belief, Foundation Medicine, Inc. ("Foundation") is a corporation organized and existing under the laws of the state of Delaware, having its principal place of business at 150 Second Street, Cambridge, MA 02141. Foundation markets and sells liquid biopsy products known as FoundationOne® Liquid and FoundationOne® Liquid CDx. On

information and belief, Foundation performs the FoundationOne® Liquid and FoundationOne® Liquid CDx tests at its facility in Cambridge, MA.

JURISDICTION AND VENUE

6. This action arises under the patent laws of the United States, 35 U.S.C. §§ 100, *et seq.*, and this Court has jurisdiction over the subject matter of this action under 28 U.S.C. §§ 1331, 1338(a), 2201 and 2202.

7. Venue is proper in this Court under 28 U.S.C. §§ 1391 and 1400(b).

8. This Court has jurisdiction over Foundation because, upon information and belief, Foundation Medicine is a Delaware corporation.

9. This Court also has jurisdiction over Foundation because, upon information and belief, Foundation, directly or indirectly, uses, offers for sale, and/or sells the FoundationOne® Liquid and FoundationOne® Liquid CDx products throughout the United States and in this judicial district.

10. Further, the Court has jurisdiction over Foundation because, *inter alia*, this action arises from actions of Foundation directed toward Delaware, and because Foundation has purposefully availed itself of the rights and benefits of Delaware law by engaging in systematic and continuous contacts with Delaware. Upon information and belief, Foundation regularly and continuously transacts business within Delaware, including by selling the FoundationOne® Liquid and FoundationOne® Liquid CDx products in Delaware, either on its own or through its affiliates. Upon information and belief, Foundation derives substantial revenue from the sale of FoundationOne® Liquid and FoundationOne® Liquid CDx in Delaware and has availed itself of the privilege of conducting business within Delaware.

11. For these reasons and for other reasons that will be presented to the Court if jurisdiction is challenged, the Court has personal jurisdiction over Foundation.

BACKGROUND

12. Guardant repeats and re-alleges the foregoing paragraphs as if set forth specifically herein.

13. On information and belief, in the mid-2016 timeframe Foundation began commercializing a liquid biopsy product termed FoundationACT. According to a Foundation press release, FoundationACT is "an analytically validated and accurate blood-based circulating tumor DNA (ctDNA) assay that provides patients and oncologists with a new option for comprehensive genomic profiling when a tissue biopsy is not feasible or when tissue is not available. By analyzing circulating tumor DNA isolated from a patient's blood, FoundationACT can identify clinically relevant genomic alterations, and like Foundation Medicine's tissue-based genomic profiles, FoundationOne® and FoundationOne Heme®, FoundationACT delivers this comprehensive molecular information in a concise report that matches the findings with potentially relevant targeted therapies and clinical trials." Exhibit 8.

14. In February 2017, scientists affiliated with Foundation presented the poster "Genomic profiling of circulating tumor DNA (ctDNA) from patients with advanced cancers of the GI tract and anus" (attached hereto as Exhibit 9) at the American Society of Clinical Oncology meeting. On May 18, 2018, scientists associated with Foundation published a scientific paper titled "Analytical Validation of a Hybrid Capture-Based Next-Generation Sequencing Clinical Assay for Genomic Profiling of Cell-Free Circulating Tumor DNA" (attached hereto as Exhibit 10) in the Journal of Molecular Diagnostics. On information and belief, this paper describes the

methodology that Foundation uses in its liquid biopsy tests, an overview of which is presented in the figure below:

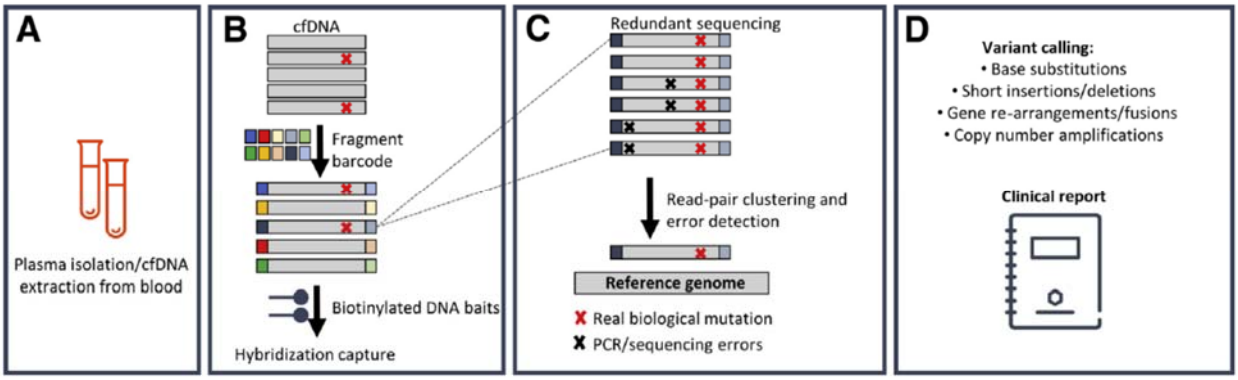

Exhibit 10.

15. On information and belief, in the 2018 timeframe, Foundation released a new version of its liquid biopsy product, and renamed it "FoundationONE® Liquid." According to a Foundation press release, "FoundationOne Liquid is a hybrid capture-based, next-generation sequencing in vitro diagnostic device for the detection of substitutions, insertion and deletion alterations (indels), copy number alterations (CNAs) and select gene rearrangements using circulating cell-free DNA (cfDNA) isolated from plasma derived from peripheral whole blood. The FoundationOne Liquid test expands upon the previous version of the Company's liquid biopsy test, FoundationACT®, which has been analytically validated across the four main classes of genomic alterations." Exhibit 11. Foundation's press release further explains that FoundationONE Liquid "analyzes 70 genes known to drive cancer growth, including homologous recombination deficiency (HRD) genes, and reports the genomic biomarker for microsatellite instability (MSI)." *Id*.

16. On information and belief, in the 2020 timeframe, Foundation released a companion diagnostics version of its liquid biopsy product is called "FoundationONE® Liquid CDx." According to a press release, "FoundationOne Liquid CDx is a qualitative next generation

sequencing based in vitro diagnostic test for prescription use only that uses targeted high throughput hybridization-based capture technology to analyze 324 genes utilizing circulating cell-free DNA (cfDNA) isolated from plasma derived from anti-coagulated peripheral whole blood of advanced cancer patients." Exhibit 12. Foundation's press release explains that the Foundation Platform detects "genomic signatures such as blood tumor mutational burden and high microsatellite instability, as well as single gene alterations, including all NTRK fusions, for patients with any solid tumor as an aid in patient care." *Id.*

17. On September 25, 2020, scientists associated with Foundation published a scientific paper titled "Clinical and analytical validation of FoundationOne Liquid CDx, a novel 324-Gene cfDNA-based comprehensive genomic profiling assay for cancers of solid tumor origin." Exhibit 13. On information and belief, this paper further describes the methodology that Foundation uses in the Foundation Platform, and in particular the FoundationOne® Liquid CDx assay.

18. On information and belief, FoundationACT, FoundationOne® Liquid and FoundationOne® Liquid CDx operate in substantially similar manners, with the largest difference being the numbers of genes targeted by each product. For instance, in a label accompanying the FoundationOne® Liquid CDx's submission to the FDA, Foundation states that "The FoundationOne Liquid CDx assay was developed based on two versions of the FoundationOne Liquid LDT assay, each of which targeted a subset of the genomic regions targeted by FoundationOne Liquid CDx. FoundationACT (FACT) targeted 62 genes and FoundationOne Liquid targeted 70 genes." Exhibit 14.

19. Foundation infringes, literally or under the doctrine of equivalents, Guardant's '810 patent through its activities connected to its performance of the FoundationOne® Liquid and

FoundationOne® Liquid CDx tests. For instance, representative claim 1 of the '810 patent is listed below:

> 1. A method for detecting somatic genetic variants of cell-free deoxyribonucleic acid (DNA) in a human subject, the method comprising:
>
> (a) obtaining 10 to 100 nanograms (ng) of double-stranded cell-free DNA from a blood sample from the human subject;
>
> (b) ligating adapters comprising molecular barcodes to ends of a plurality of molecules of the double-stranded cell-free DNA to produce tagged parent polynucleotides, wherein the molecular barcodes together constitute a set of 5-100 molecular barcodes from 5-20 nucleotides in length;
>
> (c) amplifying a plurality of the tagged parent polynucleotides to produce progeny polynucleotides with associated molecular barcodes;
>
> (d) selectively enriching the progeny polynucleotides for target regions associated with cancer, whereby enriched progeny polynucleotides are generated;
>
> (e) sequencing a portion of the enriched progeny polynucleotides to produce sequencing reads of the progeny polynucleotides with associated molecular barcodes;
>
> (f) aligning mappable portions of the sequencing reads to a human reference genome;
>
> (g) grouping a plurality of the sequencing reads into families based on the sequence information of the molecular barcodes and the beginning and end base positions of the mapped portion of the progeny polynucleotides; and
>
> (h) detecting, from among a plurality of the families, the presence or absence of one or more somatic genetic variants comprising a single nucleotide variant (SNV), a copy number variation (CNV), an insertion or deletion (indel), a gene fusion, or any combination thereof.

20. Performance of Foundation's liquid biopsy tests leads to infringement of claim 1 in the following way. First, cfDNA is extracted from blood (step a). Next, barcodes are ligated to each end of cfDNA to produce tagged parent polynucleotides (step b). The tagged parent polynucleotides containing the ligated barcodes are then amplified (step c) and selectively enriched for target regions associated with cancer (step d). The amplified progeny polynucleotides are then sequenced (step e). Sequence reads are mapped to a human reference genome (step f) and are then grouped into families according to their barcode sequence and the beginning and end base

positions of the mapped portion of the progeny (step g). Lastly, the tests detect the presence of genetic mutations from the families (step h).

21. As an example, attached hereto as Exhibit 15 is a preliminary and exemplary claim chart detailing Foundation's infringement of exemplary claims of the '810 patent. This chart is not intended to limit Guardant's right to modify this chart or any other claim chart or allege that other activities of Foundation infringe the identified claims or any other claims of the '810 patent or any other patents.

22. Foundation infringes, literally or under the doctrine of equivalents, Guardant's '085 patent through its activities connected to its performance of the FoundationOne® Liquid and FoundationOne® Liquid CDx tests. For instance, representative claim 1 of the '085 patent is listed below:

> 1. A method for generating a genetic profile of a tumor from a blood sample of double-stranded cell-free deoxyribonucleic acids (cfDNA) molecules from a subject having cancer or suspected of having a cancer, the method comprising:
>
> (a) obtaining a population comprising the double-stranded cfDNA molecules from the blood sample from the subject;
>
> (b) ligating a set of molecular barcodes to both ends of a plurality of the double-stranded cfDNA molecules using more than a 30x molar excess of molecular barcodes relative to the double-stranded cfDNA molecules to produce tagged parent polynucleotides, wherein a given molecular barcode is a member of a set of molecular barcodes comprising 2 to 1,000,000 different molecular barcode sequences,
>
> wherein at least 20% of the double-stranded cfDNA molecules from the population of cfDNA molecules are attached to molecular barcodes
>
> (c) amplifying a plurality of the tagged parent polynucleotides to produce progeny polynucleotides with associated molecular barcodes;
>
> (d) selectively enriching a subset of the progeny polynucleotides for target regions associated with cancer, whereby enriched progeny polynucleotides are generated;
>
> (e) sequencing a portion of the enriched progeny polynucleotides to produce sequencing reads of the progeny polynucleotides with associated molecular barcodes;

(f) aligning a plurality of the sequencing reads to a reference sequence;

(g) grouping a plurality of the sequencing reads into a plurality of families based at least on sequence information of the molecular barcodes, a start base position of a given sequencing read from among the sequencing reads at which the given sequencing read is determined to start aligning to the reference sequence, and a stop base position of the given sequencing read at which the given sequencing read is determined to stop aligning to the reference sequence, wherein a family of the plurality of families is representative of a cell-free nucleic acid molecule in the sample;

(h) detecting, from among the families, the presence or absence of somatic genetic variants; and

(i) quantifying a plurality of somatic genetic variants detected as present to generate the genetic profile of the tumor.

23. Performance of Foundation's liquid biopsy tests leads to infringement of claim 1 in the following way. First, cfDNA is extracted from blood (step a). Next, molecular barcodes are ligated to both ends of double-stranded cfDNA molecules (step b). The tagged parent polynucleotides containing the ligated barcodes are then amplified (step c) and selectively enriched (step d). Amplified progeny polynucleotides are sequenced to produce sequence reads (step e). Sequence reads are aligned to a reference genome (step f), and grouped based on sequence information of the barcodes, a start position, and a stop position of the sequencing read (step g). Lastly, the tests detect (step h) and quantified (step i) the genetic mutations of a tumor.

24. As an example, attached hereto as Exhibit 16 is a preliminary and exemplary claim chart detailing Foundation's infringement of exemplary claims of the '085 patent. This chart is not intended to limit Guardant's right to modify this chart or any other claim chart or allege that other activities of Foundation infringe the identified claims or any other claims of the '085 patent or any other patents.

25. Foundation infringes, literally or under the doctrine of equivalents, Guardant's '086 patent through its activities connected to its performance of the FoundationOne® Liquid and

FoundationOne® Liquid CDx tests. For instance, representative claim 1 of the '086 patent is listed below:

> 1. A method for detecting a presence or absence of one or more somatic genetic variants in cell-free deoxyribonucleic acid (cfDNA) molecules from a bodily fluid sample of a subject, comprising:
>
> (a) non-uniquely tagging a plurality of cfDNA molecules from a population of cfDNA molecules obtained from the bodily fluid sample with molecular barcodes from a set of molecular barcodes to produce non-uniquely tagged parent polynucleotides;
>
> wherein the non-uniquely tagging comprises ligating molecular barcodes from the set of molecular barcodes to both ends of a cfDNA molecule from the plurality of cfDNA molecules using more than a 10x molar excess of molecular barcodes relative to the population of cfDNA molecules,
>
> wherein the cfDNA molecules that map to a mappable base position of a reference sequence are tagged with a number of diffrent[sic] molecular barcodes ranging from at least 2 and fewer than a number of cfDNA molecules that map to the mappable base position, and
>
> wherein at least 20% of the cfDNA molecules from the population of cfDNA molecules are attached to molecular barcodes;
>
> (b) amplifying a plurality of the non-uniquely tagged parent polynucleotides to produce progeny polynucleotides with associated molecular barcodes,
>
> (c) sequencing a plurality of the progeny polynucleotides to produce sequencing reads of the progeny polynucleotides with associated molecular barcodes;
>
> (d) mapping a plurality of the sequencing reads to the reference sequence to generate mapped sequencing reads;
>
> (e) grouping a plurality of the mapped sequencing reads into a plurality of families based on sequence information from the molecular barcodes and at least (1) a start base position of a given mapped sequencing read from among the mapped sequencing reads at which the given mapped sequencing read is determined to start mapping to the reference sequence and/or (2) a stop base position of the given mapped sequencing read at which the given mapped sequencing read is determined to stop mapping to the reference sequence; and
>
> (f) detecting, from among the mapped sequencing reads in a plurality of the families, the presence or absence of the one or more somatic genetic variants.

26. Performance of Foundation's liquid biopsy tests leads to infringement of claim 1 in the following way. First, cfDNA is non-uniquely tagged by ligating molecular barcodes to both ends of cfDNA molecules (step a). The tagged parent polynucleotides containing the ligated barcodes are then amplified (step b) and sequenced (step c). Sequence reads are mapped to a reference genome (step d) and grouped into a plurality of families based on sequence information of the barcodes and the start base position or stop base position (step e). Lastly, the tests detect the presence of genetic mutations some or all of the mapped sequence reads (step f).

27. As an example, attached hereto as Exhibit 17 is a preliminary and exemplary claim chart detailing Foundation's infringement of exemplary claims of the '086 patent. This chart is not intended to limit Guardant's right to modify this chart or any other claim chart or allege that other activities of Foundation infringe the identified claims or any other claims of the '086 patent or any other patents.

28. Foundation infringes, literally or under the doctrine of equivalents, Guardant's '916 patent through its activities connected to its performance of the FoundationOne® Liquid and FoundationOne® Liquid CDx tests. For instance, representative claim 13 of the '916 patent is listed below:

> 13. A method for detecting a genetic variation in one or more microsatellite regions in a sample of cell-free nucleic acid molecules from a subject having a cancer, the method comprising:
>
> (a) ligating molecular barcodes from a set of molecular barcodes having 2 to 1,000,000 different molecular barcode sequences to a plurality of the cell-free nucleic acid molecules from the sample to produce tagged parent polynucleotides;
>
> (b) amplifying a plurality of the tagged parent polynucleotides to produce amplified tagged progeny polynucleotides;
>
> (c) sequencing a plurality of the amplified tagged progeny polynucleotides to produce a set of sequencing reads; and
>
> (d) determining, from among a plurality of sequencing reads in the set of sequencing reads, a quantitative measure of polymorphic forms

> comprising microsatellite changes in the one or more microsatellite regions based at least on sequence information of the molecular barcodes, thereby detecting the genetic variation in the one or more microsatellite regions.

29. Performance of Foundation's liquid biopsy tests leads to infringement of claim 13 in the following way. First, cfDNA is tagged with a set of molecular barcodes comprising 2 to 1,000,000 different barcode sequences via ligation (step a). The tagged parent polynucleotides containing the ligated barcodes are then amplified (step b) and sequenced (step c). Sequence reads are grouped into families comprising sequence reads amplified from the same parent polynucleotide using at least sequence information of the molecular barcodes. Microsatellite changes are detected from among the families of sequence reads by quantifying sequence changes at repetitive loci regions (step d).

30. As an example, attached hereto as Exhibit 18 is a preliminary and exemplary claim chart detailing Foundation's infringement of exemplary claims of the '916 patent. This chart is not intended to limit Guardant's right to modify this chart or any other claim chart or allege that other activities of Foundation infringe the identified claims or any other claims of the '916 patent or any other patents.

31. Foundation infringes, literally or under the doctrine of equivalents, Guardant's '063 patent through its activities connected to its performance of the FoundationOne® Liquid and FoundationOne® Liquid CDx tests. For instance, representative claim 1 of the '063 patent is listed below:

> 1. A method for classifying consensus sequences generated from sequencing reads derived from double-stranded cell-free deoxyribonucleic acid (cfDNA) molecules from a sample of a human subject, the method comprising:
>
> (a) non-uniquely tagging a population of double-stranded cfDNA molecules from the sample with more than a 10× molar excess of adapters comprising molecular barcodes, relative to the double-stranded cfDNA molecules in the population, to generate non-uniquely tagged parent polynucleotides,

wherein the double-stranded cfDNA molecules that map to a mappable base position of a reference sequence are tagged with a number of different molecular barcodes ranging from at least 2 to fewer than a number of double-stranded cfDNA molecules that map to the mappable base position, and

wherein at least 20% of the double-stranded cfDNA molecules are non-uniquely tagged with the adapters comprising the molecular barcodes at both ends of a molecule of the double-stranded cfDNA molecules;

(b) amplifying a plurality of the non-uniquely tagged parent polynucleotides to produce progeny polynucleotides;

(c) enriching a plurality of the progeny polynucleotides for target regions of interest to generate enriched progeny polynucleotides;

(d) sequencing a plurality of the enriched progeny polynucleotides to produce a set of sequencing reads;

(e) mapping a plurality of sequencing reads from the set of sequencing reads to the reference sequence;

(f) grouping a plurality of the mapped sequencing reads into families of mapped sequencing reads based at least on (i) sequence information from the molecular barcodes and (ii) a beginning base position and an ending base position of the mapped sequencing reads;

(g) generating a consensus sequence for each family from among one or more of the families to produce a set of consensus sequences; and

(h) classifying one or more consensus sequences from among the set of consensus sequences as (1) paired consensus sequences generated from sequencing reads representing a Watson strand and a Crick strand of a non-uniquely tagged parent polynucleotide or (2) unpaired consensus sequences generated from sequencing reads representing only one of either a Watson strand or a Crick strand of a non-uniquely tagged parent polynucleotide.

32. Performance of Foundation's liquid biopsy tests leads to infringement of claim 1 in the following way. First, cfDNA is tagged with a set of molecular barcodes via ligation (step a). Upon information and belief, the ligation process involves utilizing at least 10 times molar excess of adapters, resulting in the tagging of at least 20% of cfDNA. The tagged parent polynucleotides containing the ligated barcodes are then amplified (step b). Amplified polynucleotides are enriched via a hybrid capture process using bait sets targeting desired sequence loci (step c). Enriched polynucleotides are sequenced on the Illumina high-throughput sequencing platform

(step d). Sequence reads are (i) mapped to reference sequences from databases such as the COSMIC database (step e), and (ii) grouped into families based on the barcode and additional sequence information, thereby identifying sequence reads that arises from the same parent DNA molecule (step f). Foundation next identifies consensus sequences using the information contained in the set of sequence reads belonging to each family (step g). The combination of the sequence start position and barcode sequence allows Foundation to classify consensus sequences as either being paired consensus sequences or unpaired consensus sequences (step h). The identity of these base calls allow for detection of genetic aberrations including single base substitutions, copy number variations, and insertions/deletions (step h).

33. As an example, attached hereto as Exhibit 19 is a preliminary and exemplary claim chart detailing Foundation's infringement of exemplary claims of the '063 patent. This chart is not intended to limit Guardant's right to modify this chart or any other claim chart or allege that other activities of Foundation infringe the identified claims or any other claims of the '063 patent or any other patents.

34. Foundation infringes, literally or under the doctrine of equivalents, Guardant's '743 patent through its activities connected to its performance of the FoundationOne® Liquid CDX test. For instance, representative claim 10 of the '743 patent is listed below:

> 10. A method for detecting a rare mutation in a cell-free or substantially cell-free sample obtained from a subject, comprising:
>
> (a) sequencing extracellular polynucleotides from a bodily sample from the subject, wherein each of the extracellular polynucleotides generates a plurality of sequence reads;
>
> (b) filtering out reads that fail to meet a set accuracy, quality score, or mapping score threshold;
>
> (c) mapping sequence reads derived from the sequencing onto a reference sequence;
>
> (d) determining unique sequence reads corresponding to the extracellular polynucleotides from among the sequence reads; and

(e) identifying a subset of mapped unique sequence reads that include a variant as compared to the reference sequence at each mappable base position;

(f) for each mappable base position, calculating a ratio of (a) a number of mapped unique sequence reads that include a variant as compared to the reference sequence, to (b) a number of total unique sequence reads for each mappable base position; and

(g) processing the ratio with a similarly derived number from a reference sample.

35. Performance of Foundation's liquid biopsy tests leads to infringement of this claim in the following way. First, cell free DNA is obtained from a patient blood draw (step a). After processing, the cell free DNA is sequenced, generating sequence reads (step a). Sequence reads are filtered using quality scores (step b). Sequence reads are (i) mapped to reference sequences from databases such as the COSMIC database (step c), (ii) grouped into families based on the barcode and additional sequence information, allowing one to determine unique sequence reads corresponding to the extracellular polynucleotides (step d). The subset of unique sequence reads containing a variant can be identified, by comparing the sequence read to the reference sequence (step e). That allows Foundation to calculate the ratio of unique sequence reads that include a variant versus total sequence reads, and compare that to a reference to identify rare mutations (steps f and g).

36. As an example, attached hereto as Exhibit 20 is a preliminary and exemplary claim chart detailing Foundation's infringement of exemplary claims of the '743 patent. This chart is not intended to limit Guardant's right to modify this chart or any other claim chart or allege that other activities of Foundation infringe the identified claims or any other claims of the '743 patent or any other patents.

37. On February 1, 2019, Foundation filed a Petition for Inter Partes Review of claims 1-26 of the '743 patent. On August 18, 2020, the US Patent Office ruled that claims 10-19 and 21

were not unpatentable. Therefore, Foundation is estopped from further challenging the validity of claims 10-19 and 21 under 35 U.S.C. §§ 102, 103.

38. Foundation infringes, literally or under the doctrine of equivalents, Guardant's '822 patent through its activities connected to its performance of the FoundationOne® Liquid CDx test. For instance, representative claims 1 and 12 of the '822 patent are listed below:

> 1. A method, comprising:
>
> (a) providing a population of cell free DNA ("cfDNA") molecules obtained from a bodily sample from a subject;
>
> (b) converting the population of cfDNA molecules into a population of non-uniquely tagged parent polynucleotides, wherein each of the non-uniquely tagged parent polynucleotides comprises (i) a sequence from a cfDNA molecule of the population of cfDNA molecules, and (ii) an identifier sequence comprising one or more polynucleotide barcodes;
>
> (c) amplifying the population of non-uniquely tagged parent polynucleotides to produce a corresponding population of amplified progeny polynucleotides;
>
> (d) sequencing the population of amplified progeny polynucleotides to produce a set of sequence reads;
>
> (e) mapping sequence reads of the set of sequence reads to one or more reference sequences from a human genome;
>
> (f) grouping the sequence reads into families, each of the families comprising sequence reads comprising the same identifier sequence and having the same start and stop positions, whereby each of the families comprises sequence reads amplified from the same tagged parent polynucleotide;
>
> (g) at each genetic locus of a plurality of genetic loci in the one or more reference sequences, collapsing sequence reads in each family to yield a base call for each family at the genetic locus; and
>
> (h) determining a frequency of one or more bases called at the locus from among the families.
>
> 12. The method of claim 1, wherein the population of polynucleotides is tagged with n different unique identifiers, wherein n is no more than 100*z, wherein z is a mean of an expected number of duplicate molecules having the same start and stop positions in the sample

39. Performance of Foundation's liquid biopsy tests leads to infringement of this claim in the following way. First, more than 10 ng of cell free DNA is obtained from a patient blood

draw (step a). Tags comprising barcodes are then attached to both ends of the DNA fragments that are present in the sample of cell free DNA (step b). The tagged DNA sample is then subject to PCR amplification (step c). The amplified DNA is then subject to sequencing on the Illumina sequencing platform, resulting in sequence reads that consist of a barcode sequence and a sequence present in the cell free DNA (step d). The sequence reads are (i) grouped into families based on the barcode and additional sequence information, allowing one to collect sequence information that arises from the same DNA molecule (step e), (ii) compared to one another to arrive at a "consensus sequence" that represents a more accurate determination of the sequence of the molecule in question (step f), and mapped to a reference genome to identify sequences that map to regions of the genome associated with cancer tumor markers (steps f-h). Finally, the number of tumor markers present in the original sample are quantified (step i).

40. As an example, attached hereto as Exhibit 21 is a preliminary and exemplary claim chart detailing Foundation's infringement of claim 12 of the '822 patent. This chart is not intended to limit Guardant's right to modify this chart or any other claim chart or allege that other activities of Foundation infringe the identified claims or any other claims of the '822 patent or any other patents.

41. On February 1, 2019, Foundation filed a Petition for Inter Partes Review of claims 1-13 and 17-20 of the '822 patent. On August 18, 2020, the US Patent Office ruled that claim 12 was not unpatentable. Therefore, Foundation is estopped from further challenging the validity of claim 12 under 35 U.S.C. §§ 102, 103.

WILLFUL INFRINGEMENT

42. Guardant repeats and re-alleges the foregoing paragraphs as if set forth specifically herein.

43. Foundation's infringement of the patents-in-suit has been and is deliberate and willful and constitutes egregious misconduct. Foundation had actual knowledge of (or was willfully blind to) the patents-in-suit and applications resulting in the patents-in-suit. Despite this knowledge, Foundation continued to develop and launch its infringing products even after this suit was filed.

44. On November 9, 2017, Guardant filed a lawsuit alleging infringement of U.S. Patent No. 9,598,731. Exhibit 22 [Case No. 17-1616, Guardant's Complaint]. On February 5, 2018, Guardant amended its complaint to add the '822 and '743 patents. *See* Exhibit 23 [Case No. 17-1616, Guardant's First Amended Complaint]. Therefore, Foundation has known about and has been willfully infringing at least the '743 and '822 patents since the dates of those complaints.

45. Furthermore, the '810, '085, '086, '916, and '063 patents are owned by Guardant. The '810 patent issued December 10, 2019, the '085 patent issued July 7, 2020, the '086 patent issued July 7, 2020, the '916 patent issued October 6, 2020, and the '063 patent issued October 13, 2020. Given that Guardant and FMI were already involved in the present litigation at the time the '810, '085, '086, '916, and '063 patents had issued, this further confirms that Foundation is either aware of these patents or is willfully blind to the existence of these patents.

46. Furthermore, Foundation and Guardant are direct competitors in the market for cancer testing based on the use of cell free DNA. In view of this fact and Guardant's prior lawsuit against Foundation, Foundation has been monitoring Guardant and its intellectual property filings since well before the suit was filed. As one example, on November 5, 2020, Foundation filed a European opposition proceeding directed to Guardant's European Patent 3 378 952, thus confirming that Foundation has been monitoring the status of Guardant's patent portfolio. In view

of these facts, Foundation is aware of the patents-in-suit and/or is willfully blind to their existence. Foundation's ongoing infringement has thus been willful.

COUNT I

(Infringement of U.S. Patent No. 10,501,810)

47. Guardant repeats and re-alleges the foregoing paragraphs as if set forth specifically herein.

48. On December 10, 2019, the United States Patent and Trademark Office duly and legally issued the '810 patent, entitled "Systems and methods to detect rare mutations and copy number variation," which is solely assigned to Guardant. Guardant is the owner of all rights, title to and interest in the '810 patent.

49. On information and belief, Foundation has infringed and continues to infringe at least claim 1 of the '810 patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by performing within the United States without authority the FoundationOne® Liquid and FoundationOne® Liquid CDx tests. As an example, attached as Exhibit 15 is a preliminary and exemplary claim chart detailing Foundation's infringement of these claims of the '810 patent. This chart is not intended to limit Guardant's right to modify the chart or allege that other activities of Guardant infringe the identified claims or any other claims of the '810 patent or any other patents.

50. Exhibit 15 is hereby incorporated by reference in its entirety. Each claim element in Exhibit 15 that is mapped to Foundation's FoundationOne® Liquid and FoundationOne® Liquid CDx tests shall be considered an allegation within the meaning of the Federal Rules of Civil Procedure and therefore a response to each allegation is required.

COUNT II

(Infringement of U.S. Patent No. 10,704,085)

51. Guardant repeats and re-alleges the foregoing paragraphs as if set forth specifically herein.

52. On July 7, 2020, the United States Patent and Trademark Office duly and legally issued the ’085 patent, entitled “Systems and methods to detect rare mutations and copy number variation,” which is solely assigned to Guardant. Guardant is the owner of all rights, title to and interest in the ’085 patent.

53. On information and belief, Foundation has infringed and continues to infringe at least claim 1 of the ’085 patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by performing within the United States without authority the FoundationOne® Liquid and FoundationOne® Liquid CDx tests. As an example, attached as Exhibit 16 is a preliminary and exemplary claim chart detailing Foundation’s infringement of these claims of the ’085 patent. This chart is not intended to limit Guardant’s right to modify the chart or allege that other activities of Guardant infringe the identified claims or any other claims of the ’085 patent or any other patents.

54. Exhibit 16 is hereby incorporated by reference in its entirety. Each claim element in Exhibit 16 that is mapped to Foundation’s FoundationOne® Liquid and FoundationOne® Liquid CDx tests shall be considered an allegation within the meaning of the Federal Rules of Civil Procedure and therefore a response to each allegation is required.

COUNT III

(Infringement of U.S. Patent No. 10,704,086)

55. Guardant repeats and re-alleges the foregoing paragraphs as if set forth specifically herein.

56. On July 7, 2020, the United States Patent and Trademark Office duly and legally issued the ’086 patent, entitled “Systems and methods to detect rare mutations and copy number

variation," which is solely assigned to Guardant. Guardant is the owner of all rights, title to and interest in the '086 patent.

57. On information and belief, Foundation has infringed and continues to infringe at least claim 1 of the '086 patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by performing within the United States without authority the FoundationOne® Liquid and FoundationOne® Liquid CDx tests. As an example, attached as Exhibit 17 is a preliminary and exemplary claim chart detailing Foundation's infringement of these claims of the '086 patent. This chart is not intended to limit Guardant's right to modify the chart or allege that other activities of Guardant infringe the identified claims or any other claims of the '086 patent or any other patents.

58. Exhibit 17 is hereby incorporated by reference in its entirety. Each claim element in Exhibit 17 that is mapped to Foundation's FoundationOne® Liquid and FoundationOne® Liquid CDx tests shall be considered an allegation within the meaning of the Federal Rules of Civil Procedure and therefore a response to each allegation is required.

COUNT IV

(Infringement of U.S. Patent No. 10,793,916)

59. Guardant repeats and re-alleges the foregoing paragraphs as if set forth specifically herein.

60. On October 6, 2020, the United States Patent and Trademark Office duly and legally issued the '916 patent, entitled "Systems and methods to detect rare mutations and copy number variation," which is solely assigned to Guardant. Guardant is the owner of all rights, title to and interest in the '916 patent.

61. On information and belief, Foundation has infringed and continues to infringe at least claim 13 of the '916 patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of

equivalents, by performing within the United States without authority the FoundationOne® Liquid and FoundationOne® Liquid CDx tests. As an example, attached as Exhibit 18 is a preliminary and exemplary claim chart detailing Foundation's infringement of these claims of the '916 patent. This chart is not intended to limit Guardant's right to modify the chart or allege that other activities of Guardant infringe the identified claims or any other claims of the '916 patent or any other patents.

62. Exhibit 18 is hereby incorporated by reference in its entirety. Each claim element in Exhibit 18 that is mapped to Foundation's FoundationOne® Liquid and FoundationOne® Liquid CDx tests shall be considered an allegation within the meaning of the Federal Rules of Civil Procedure and therefore a response to each allegation is required.

COUNT V

(Infringement of U.S. Patent No. 10,801,063)

63. Guardant repeats and re-alleges the foregoing paragraphs as if set forth specifically herein.

64. On October 13, 2020, the United States Patent and Trademark Office duly and legally issued the '063 patent, entitled "Methods and systems for detecting genetic variants," which is solely assigned to Guardant. Guardant is the owner of all rights, title to and interest in the '063 patent.

65. On information and belief, Foundation has infringed and continues to infringe at least claim 1 of the '063 patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by performing within the United States without authority the FoundationOne® Liquid and FoundationOne® Liquid CDx tests. As an example, attached as Exhibit 19 is a preliminary and exemplary claim chart detailing Foundation's infringement of these claims of the '063 patent. This chart is not intended to limit Guardant's right to modify the chart or allege that other activities

of Guardant infringe the identified claims or any other claims of the ’063 patent or any other patents.

66. Exhibit 19 is hereby incorporated by reference in its entirety. Each claim element in Exhibit 19 that is mapped to Foundation’s FoundationOne® Liquid and FoundationOne® Liquid CDx tests shall be considered an allegation within the meaning of the Federal Rules of Civil Procedure and therefore a response to each allegation is required.

COUNT VI

(Infringement of U.S. Patent No. 9,840,743)

67. Guardant repeats and re-alleges the foregoing paragraphs as if set forth specifically herein.

68. On December 12, 2017, the United States Patent and Trademark Office duly and legally issued the ’743 patent, entitled “Systems and Methods to Detect Rare Mutations and Copy Number Variation,” which is solely assigned to Guardant. Guardant is the owner of all rights, title to and interest in the ’743 patent.

69. On information and belief, Foundation has infringed and continues to infringe at least claim 10 of the ’743 patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by performing within the United States without authority the FoundationOne® Liquid CDx test. As an example, attached as Exhibit 20 is a preliminary and exemplary claim chart detailing Foundation’s infringement of these claims of the ’743 patent. This chart is not intended to limit Guardant’s right to modify the chart or allege that other activities of Guardant infringe the identified claims or any other claims of the ’743 patent or any other patents.

70. Exhibit 20 is hereby incorporated by reference in its entirety. Each claim element in Exhibit 20 that is mapped to the FoundationOne® Liquid CDx test shall be considered an

allegation within the meaning of the Federal Rules of Civil Procedure and therefore a response to each allegation is required.

COUNT VII

(Infringement of U.S. Patent No. 9,834,822)

71. Guardant repeats and re-alleges the foregoing paragraphs as if set forth specifically herein.

72. On December 5, 2017, the United States Patent and Trademark Office duly and legally issued the ’822 patent, entitled “Systems and Methods to Detect Rare Mutations and Copy Number Variation,” which is solely assigned to Guardant. Guardant is the owner of all rights, title to and interest in the ’822 patent.

73. On information and belief, Foundation has infringed and continues to infringe at least claims 1 and 12 of the ’822 patent pursuant to 35 U.S.C. § 271(a), literally or under the doctrine of equivalents, by performing within the United States without authority the FoundationOne® Liquid CDx test. As an example, attached as Exhibit 21 is a preliminary and exemplary claim chart detailing Foundation’s infringement of these claims of the ’822 patent. This chart is not intended to limit Guardant’s right to modify the chart or allege that other activities of Guardant infringe the identified claims or any other claims of the ’822 patent or any other patents.

74. Exhibit 21 is hereby incorporated by reference in its entirety. Each claim element in Exhibit 21 that is mapped to Foundation’s FoundationOne® Liquid CDx test shall be considered an allegation within the meaning of the Federal Rules of Civil Procedure and therefore a response to each allegation is required.

JURY DEMAND

75. Guardant demands a jury trial on all issues so triable.

PRAYER FOR RELIEF

WHEREFORE, Guardant prays that this Court grant the following relief:

A. A judgment that Foundation has infringed the ’810 patent, the ’085 patent, the ’086 patent, the ’916 patent, the ’063 patent, the ’743 patent, and/or the ’822 patent and that the ’810 patent, the ’085 patent, the ’086 patent, the ’916 patent, the ’063 patent, the ’743 patent, and/or the ’822 patent are valid.

B. Damages or other monetary relief, including, but not limited to, costs and pre- and post-judgment interest, to Guardant;

C. An order enjoining Foundation and its officers, directors, agents, servants, affiliates, employees, divisions, branches, subsidiaries, parents, and all others acting in active concert therewith from further infringement of the ’810 patent, the ’085 patent, the ’086 patent, the ’916 patent, the ’063 patent, the ’743 patent, and/or the ’822 patent;

D. A determination that Foundation’s infringement of the ’810 patent, the ’085 patent, the ’086 patent, the ’916 patent, the ’063 patent, the ’743 patent, and/or the ’822 patent has been willful, and an award of enhanced damages, up to and including trebling of the damages awarded to Guardant.

E. An accounting and additional damages for any infringing sales not presented at trial.

F. Such further and other relief as this Court deems proper and just, including, but not limited to, a determination that this is an exceptional case under 35 U.S.C. § 285 and an award of attorneys’ fees and costs to Guardant in this action.

Dated: November 23, 2020

Respectfully submitted,

FARNAN LLP

/s/ Michael J. Farnan

Brian E. Farnan (Bar No. 4089)
Michael J. Farnan (Bar No. 5165)
919 N. Market St., 12th Floor
Wilmington, DE 19801
Tel: (302) 777-0300
Fax: (302) 777-0301
bfarnan@farnanlaw.com
mfarnan@farnanlaw.com

Attorneys for Plaintiff Guardant Health, Inc.

OF COUNSEL:

Edward R. Reines
Derek Walter
WEIL, GOTSHAL &MANGES LLP
201 Redwood Shores Parkway
Redwood Shores, CA 94065
(650) 802-3000